APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/815,389	03/31/2004	Patrick Chiu	FXPL-1093US0	7581

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EXAMINER
STREGE, JOHN B

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

-- *The MAILING DATE of this communication appears on the cover sheet with the correspondence address* --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>24 July 2008</u>.

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) <u>1,3-9 and 11-19</u> is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) <u>19</u> is/are allowed.

6)☒ Claim(s) <u>1,3-9,11 and 14-18</u> is/are rejected.

7)☒ Claim(s) <u>12-13</u> is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All   b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☐ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☐ Information Disclosure Statement(s) (PTO/SB/08)
    Paper No(s)/Mail Date _____.

4)☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____.

5)☐ Notice of Informal Patent Application

6)☐ Other: _____.

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set

forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this

application is eligible for continued examination under 37 CFR 1.114, and the fee set

forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action

has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 7/24/08

has been entered.

Response to Amendment

The amendment filed 7/24/08 has been entered in full.

Response to Arguments

Applicant's arguments with respect to the claims have been considered but are

moot in view of the new grounds of rejection. Since some of the rejection involves

similar arguments to the previous office action the arguments will be discussed here.

Specifically the Applicant argues that Tserng does not merge pixel groups

together to generate regions of high importance and discusses that the bounding box

taught by Tserng can not be considered to be the same thing. However the Examiner

does not rely upon the teaching of the bounding box to generate regions of high

importance, rather relies upon col. 5 lines 1-19 to teach the merging of pixel groups. In

this section a reference image is used with the current frame to detect the absolute

difference of pixel values (which represents the kinetic energy of the pixels). This image

is then thresholded to give a difference image of motion blobs. Then heuristics are used

to group these blobs into distinct objects (these objects represent regions of high

importance). This reads on merging pixel groups together to generate regions of high importance.

The Applicant further argues that Porikili does not disclose the method of claim 1 since volumes are grown using a color based centroid linkage method. However, Porikili does not limit the invention exclusively to the centroid linkage method, and as seen in paragraph 41 where it is explained that other change detection masks can be used instead such as frame difference operators, global motion compensated masks, etc. The Applicant further states that in Porikili every single pixel in a video is grouped together as part of a bigger volume. The Examiner fails to see the relevance of this statement to the claimed invention, since Tserng is relied upon to teach that pixels having pixel values below a threshold value are not included in any pixel group (col. 5 lines 1-19). The Applicant further recites that Porkili teaches away from using kinetic energy and region based methods based on paragraph 4, however Porkili merely states that motion-based segmentation is computationally expensive, and does not teach away from using, in fact recites later that it can be used (paragraph 41). Thus the rejection of claim 1 is maintained and is set forth below.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1, 3-9, 11, and 15-16 are rejected under 35 U.S.C. 103(a) as being

unpatentable over Tserng, US 6,570,608 (hereinafter "Tserng") further in view of Porikli,

US 2003/0118214 (hereinafter "Porikli").

Regarding claims 1,3-9,11, and 15 Tserng discloses a method for finding a

region of high importance in a video (column 1, line 38), the video including a plurality of

video frames having pixels (C2, L1-7), comprising: determining a kinetic energy for the

pixels within each video frame, wherein the kinetic energy is determined using pixel

luminance values (C5, L36- 40: a frame difference, representing motion or kinetic

energy, is calculated on a pixel-by-pixel basis using pixel luminance values); assigning

pixel values to the pixels pixel, wherein each pixel having a higher than average kinetic

energy is assigned a value of one and the remaining pixels are assigned a value of zero

(C5, L51-59: the motion values are thresholded to values of one and zero); constructing

pixel groups from pixels having a value of one, wherein the pixels having a value of one

are grouped together if they are within one pixel from each other, wherein the pixels

having a value of zero are not included in any pixel group (C5, L1-19 contiguous blocks

of pixels with a value of one are grouped, if there is no difference then no blob would

appear); and merging pixel groups to generate regions of high importance, wherein the

pixel groups are merged together provided that they do not fail one or more stopping

conditions (C5 lines 1-19 discloses using heuristics to group the blobs into distinct

objects, heuristics inherently includes checking for stopping conditions). Tserng also

discloses linking objects in consecutive frames (C4, L13-14).

Tserng does not explicitly disclose that the video is regarded as a three dimensional volume in x-y-t space, the t-component of the x-y-t space representing a time axis. Tserng also does not explicitly disclose constructing one or more predetermined three-dimensional shapes to represent the regions of high importance, the predetermined thee-dimensional shapes having three dimensional volumes in the x-y-t space.

Porikli discloses a method for identifying moving objects in video (paragraph 0009) wherein the video is represented in a data structure as being a volume in x-y-t space (P0017). Further, Porikli discloses a binary threshold that depends up on average energy (P0041-0042). This allows Porikili to construct a predetermined three-dimensional shape to represent the moving object which are the objects of high importance (paragraph 9).

It would have been obvious to one having ordinary skill in the art at the time of invention was made to include the described features of Porikli in the method of Tserng to better identify moving objects in a video (Porikli, P0008). Further, Tserng and Porikli are analogous art containing several overlapping elements to solve a similar problem.

Regarding claim 16, Porikli discloses that calculating the change in luminance comprises calculating the change in luminance between video frames in the t-component of the x-y-t space (P0031 : distances are the change in value between adjacent frames).

Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tserng, US 6,570,608 (hereinafter "Tserng") further in view of Porikli, US 2003/0118214 (hereinafter "Porikli") and Divakaran et al., US 6,697,523 (hereinafter "Divakaran", a reference of record).

Regarding claim 14, Tserng does not explicitly disclose segmenting the video into at least one video clip and performing the process on the video clip. Divakaran discloses a system witch partitions a video into shots using standard techniques well known in the art before further processing (C5, L45-53).

It would have been obvious to one having ordinary skill in the art at the time of invention was made to include the described features of Divakaran in the method of Tserng thus ensuring that each video clip to be processed does not include a scene change (C5, L47-49).

Claims 17 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tserng, Porikli, and further in view of Xu, US 2003/0108238 (hereinafter "Xu").

Regarding claim 17, Tserng discloses that calculating the change in luminance using a background image. Tserng does not explicitly disclose calculating the change in luminance for each pixel using all said x-y-t components of the x-y-t space. Xu discloses a background being created from the pixels of all frames of a video shot (P0038-0039).

It would have been obvious to one skilled in the art at the time the invention was made to modify the invention of Tserng, and calculate the background image as taught

by Xu, therefore using all pixels in a shot calculate motion vectors and create a motion

detection method that is robust against as discussed by Xu (P0040).

Regarding claim 18, Xu discloses compensating each frame of a video for motion

of the camera (P0034); therefore using these compensated frames to calculate kinetic

energy will yield a residual motion velocity.

Allowable Subject Matter

Claim 19 is allowed.

The following is a statement of reasons for the indication of allowable subject

matter: None of the prior art of record discloses in combination with the other limitations

of the claim wherein the one or more stopping conditions comprises a minimum

threshold energy density and a maximum threshold volume for the merged pixel groups.

Claims 12 and 13 are objected to as being dependent upon a rejected base

claim, but would be allowable if rewritten in independent form including all of the

limitations of the base claim and any intervening claims.

Contact Information

Any inquiry concerning this communication or earlier communications from the

examiner should be directed to JOHN B. STREGE whose telephone number is

(571)272-7457. The examiner can normally be reached on Monday-Friday between the

hours of 8-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Matthew Bella can be reached on (571) 272-7778. The fax phone number

for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the

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published applications may be obtained from either Private PAIR or Public PAIR.

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you have questions on access to the Private PAIR system, contact the Electronic

Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a

USPTO Customer Service Representative or access to the automated information

system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/John Strege/
10/06/08